SECTION 3

RESOURCE LOADING

This section of the Long-Range Plan estimates projected yearly loading on the various antenna subnets for 1999 through 2008, as well as projected monthly loading for 1999 through 2001 and briefly describes the user and/or major activity causing the most contention.

Figure 10 shows the Projected Yearly Supportable Time Summary for 1999-2008. Figures 11 through 13 show the Monthly Projected Supportable Time Summary for 1999 through 2001.

The Yearly Projected Supportable Time Summary (1999-2008) and the Monthly Projected Supportable Time Summaries (1999-2008) represent the total projected support hours that all project/users can expect to receive or lose on each antenna subnet. The negative (unsupportable) hours indicate periods of over-subscription on the subnets. The low to moderate (<30%) range of unsupportable hours is not a significant problem and proper placements of support requirements will reduce some of the lost hours. Requirements for Comet Nucleus Tour and Genesis may significantly increase contention.

3.1 70-METER RESOURCE LOADING

3.1.1 1999-2008 Summary

The 70M oversubscription has been reduced to a workable level as a result of agreements negotiated at recent Resource Allocation Review Board (RARB) meetings which will help to reduce contention for 1999 and 2000.

New requirements for the 70M X-band uplink antenna downtimes for approximately 10 weeks each were not received soon enough to be included in this plan. Assessments of these requests will be incorporated into the next publication of the Long-Range Resource Allocation and Capacity Projection Plan. The X-band uplink downtime requested for DSS-14 is September 13, 1999; for DSS-63, May 1, 2000; and for DSS-43, October 7, 2001. These requests will significantly increase the 70M unsupportable times in 1999, 2000, and 2001.

In 2001, the projected unsupportable time is low throughout the year and moderate only in January, March through June, and December.

In 2002, the projected unsupportable time is low throughout the year and moderate only during January and June.

In 2004, the projected unsupportable time is low throughout the year and moderate only during January.

During 2003 and 2005 through 2008, current analysis does not indicate serious oversubscription.

3.1.2 Near-Term Planning

Recent Resource Allocation Review Board agreements have reduced the 70M projected unsupportable time to a "workable level" for 1999 through 2000. All remaining contention can be reduced to an acceptable level during the Resource Allocation Negotiation Process. During 2001, the 70M unsupportable time is low to moderate.

- **1999**

The 70M projected unsupportable time is moderate all year, RARB agreements are in place to help minimize contentions with proper placements of support requirements. The overall loading is due to DSS Maintenance support, NEAR's Eros Prime Science requirement for one pass per day, February through December, Galileo and Space VLBI support requirements, and Mars Surveyor 98 Lander Mars Approach/Entry and Surface Operations support requests in November and December. The proposed DSS-14 X-Band uplink antenna downtime requirement for approximately 10 weeks, starting September 13, 1999, has not been incorporated into this plan. The DSS-14 downtime requirement will significantly increase the 70M unsupportable time in 1999.

- **2000**

The 70M projected unsupportable time is low throughout the year and moderate only in January, July, and November and December due to DSS Maintenance requests, Space VLBI support, NEAR's Prime Science (January), Deep Space 1 Mars-Comet supports (July), and Ulysses Southern Solar requirements (November and December). The proposed DSS-43 X-band uplink antenna downtime requirement for approximately 10 weeks, starting May 1, 2000, has not been incorporated into this plan. The DSS-43 downtime requirement will significantly increase the 70M unsupportable time in 2000.

- **2001**

The 70M projected unsupportable time is low throughout the year and moderate only in January, March through June, and December due to DSS Maintenance requests, Ulysses Northern Solar and Nutation requirements, Cassini's Gravity Wave supports (May and December), Space VLBI supports (January and March through June), and Mars Surveyor 01 Orbiter Mapping and MARCI requirements (December). The proposed DSS-63 X-Band Uplink Antenna downtime requirement for approximately 10 weeks, starting October 7, 2001, has not been incorporated in this plan. The DSS-63 downtime requirement will significantly increase the 70M unsupportable time in 2001.

3.2 34-METER HEF RESOURCE LOADING

3.2.1 1999-2008 Summary

In 1999, the projected unsupportable time is low for the first half of the year and moderate for the remainder of the year.

For 2000, the projected unsupportable time is low throughout the year and moderate only during January through May and October.

In 2001, the projected unsupportable time is low throughout the year and moderate during February, April, and September through November.

For 2002, the projected unsupportable time is low throughout the year, except when moderate for January and February, July through September, and November through December. The projected unsupportable time is severe in October.

In 2003, the projected unsupportable time is low throughout the year and only moderate in May through July and September through December.

For 2004, the projected unsupportable time is low from January through May and moderate during June through December.

In 2005, the projected unsupportable time is low throughout the year and moderate during August.

For 2006, the projected unsupportable time is low from January through June and moderate July through December.

In 2007, the projected unsupportable time is low throughout the year, except when severe in January and moderate in February through July.

During 2008, current analysis does not indicate serious oversubscription.

3.2.2 Near-Term Planning

1999

The 34H projected unsupportable time is low for the first six months and moderate for the remainder of the year. The moderate projected unsupportable time is due to continuous coverage requirement for NEAR Prime Science during late July through mid-August (Weeks 31-33), DSN CAT M&E supports, DSS Maintenance requests, MGS Mars Mapping, Mars Surveyor 98 Lander Approach and Surface Operations, Mars Surveyor 98 Orbiter Approach and Aerobraking, RASA Crustal Dynamics, ICE, Ulysses (DSS-65) and Voyager 2 (DSS-45) requirements.

2000

The 34H projected unsupportable time is moderate in January through May and October due to Mars Surveyor 98 Lander Surface Operations (January through February), MGS Mapping and Communication Relay, Stardust support requirements (March through May), Cassini TCM support (October), ICE, and Voyager 2 (DSS-45) SIRD requirements.

2001

The 34H projected unsupportable time is moderate in February, April and September through November due to Mars Surveyor 98 Orbiter Mapping, MGS Relay support, Cassini TCM (February), GSSR GODR (DSS-14/15), RASA Crustal Dynamics, SIRTF Launch support (November and December), ICE and Voyager 2 (DSS-45) SIRD requirements.

3.3 34-METER BEAM WAVEGUIDE 1 RESOURCE LOADING

3.3.1 1999-2008 Summary

In 1999, the projected unsupportable time is low throughout the year and moderate only in January, February, and July through December.

In 2000, the projected unsupportable time is low throughout the year and moderate only during January, November, and December.

In 2001, the projected unsupportable time is moderate from January through October and severe in November and December.

In 2002, the projected unsupportable time is severe in January and moderate in October through December.

In 2003, the projected unsupportable time is low except when it is moderate in January through April.

In 2004, the projected unsupportable time is low from January through October and moderate in November and December.

In 2005, the projected unsupportable time is low throughout the year except moderate in January and August through December.

In 2006, the projected unsupportable time is moderate in January and low for the remainder of the year.

During 2007 through 2008, current analysis does not indicate serious oversubscription.

3.3.2 Near-Term Planning

1999

The 34B1 projected unsupportable time is moderate in January, February, and July through December. The projected unsupportable time early in the year is due to Lunar Prospector (January and February), Mars Surveyor Lander Launch support (January), Deep Space 1 Asteroid Encounter (January), and Stardust Launch support (February) requirements. In the remainder of the year, the projected unsupportable time is due to NEAR Prime Science (May through December), Cassini Venus-Earth (July through August), and Planet-B MOI (September). Additional contributors are AXAF, Ulysses, plus ICE and Voyager 1 requirements.

2000

The 34B1 projected unsupportable time is low throughout the year and moderate only in January, November, and December. The projected unsupportable time in January is due to AXAF and IMAGE Instrument Checkout (ICO). The projected unsupportable time in November and December is due to Cassini Jupiter Flyby, Stardust TCM support, and Voyager 2 SIRD requirements.

2001

The 34B1 projected unsupportable time is moderate throughout the year except severe in November and December. The projected unsupportable time is due to Voyager 1 and 2 SIRD requirements (January through December), Ulysses Northern Solar and Nutation support (February through December), Mars Surveyor 01 Orbiter Launch support (March), Mars Surveyor 01 Lander Launch support (April), and SIRTF Launch support (November and December).

3.4 34-METER BEAM WAVEGUIDE 2 RESOURCE LOADING

3.4.1 1999-2008 Summary

In 1999, projected unsupportable time is low, except when it is moderate for November.

For 2000, projected unsupportable time is low for the entire year.

In 2001, projected unsupportable time is low, except when it is moderate in April and December.

For 2002, projected unsupportable time is low throughout the year, except when it is moderate in January.

During 2003 through 2008, current analysis does not indicate serious oversubscription.

3.4.2 Near-Term Planning

1999

The 34B2 projected unsupportable time is low for the entire year except for November when it is moderate due to Mars Surveyor 98 Orbiter Aerobraking and NEAR Prime Science requirements.

2000

The 34B2 projected unsupportable time is low for the entire year.

2001

The 34B2 projected unsupportable time is low for the entire year, except when it is moderate in April and December. The April projected unsupportable time is due to Mars Surveyor 01 Launch phase. The December projected unsupportable time is due to Mars Surveyor 01 Lander Mars Approach, Stardust EGA, and SIRTF Launch support requirements.

3.5 34-METER HIGH SPEED BEAM WAVEGUIDE RESOURCE LOADING

3.5.1 1999-2008 Summary

In 1999, projected unsupportable time is low, except when it is moderate during June and July.

In 2000, projected unsupportable time is low for the entire year.

In 2001, projected unsupportable time is low, except when it is moderate in April through June and December.

During 2002 through 2008, current analysis does not indicate serious oversubscription.

3.5.2 Near-Term Planning

1999

The 34HSB projected unsupportable time is low for the year, except when moderate in June and July due to Lunar Prospector, ISTP-Polar, and SOHO support requirements.

2000

The 34HSB projected unsupportable time is low for the entire year.

2001

The 34HSB projected unsupportable time is low for the year, except when it is moderate in April through June and December. The April through June projected unsupportable time is due to SOHO HSO support requirements. The December projected unsupportable time is due to INTEGRAL.

3.6 26-METER RESOURCE LOADING

3.6.1 1999-2008 Summary

In 1999, support for Lunar Prospector is difficult to forecast because the viewperiod is a function of the lunar orbit and will impact almost every mission as it constantly shifts through other missions' viewperiods. Projected unsupportable time is moderate for January through May and low June through December.

In 2000, the projected unsupportable time is low for the entire year.

In 2001, the projected unsupportable time is low for the entire year.

In 2002, the projected unsupportable time is low throughout the year, except when moderate in January through March.

During 2003 through 2008, current analysis does not indicate serious oversubscription.

3.6.2 Near-Term Planning

1999

The 26M projected unsupportable time is moderate in January through May due to Lunar Prospector and SOHO HSO (March through May).

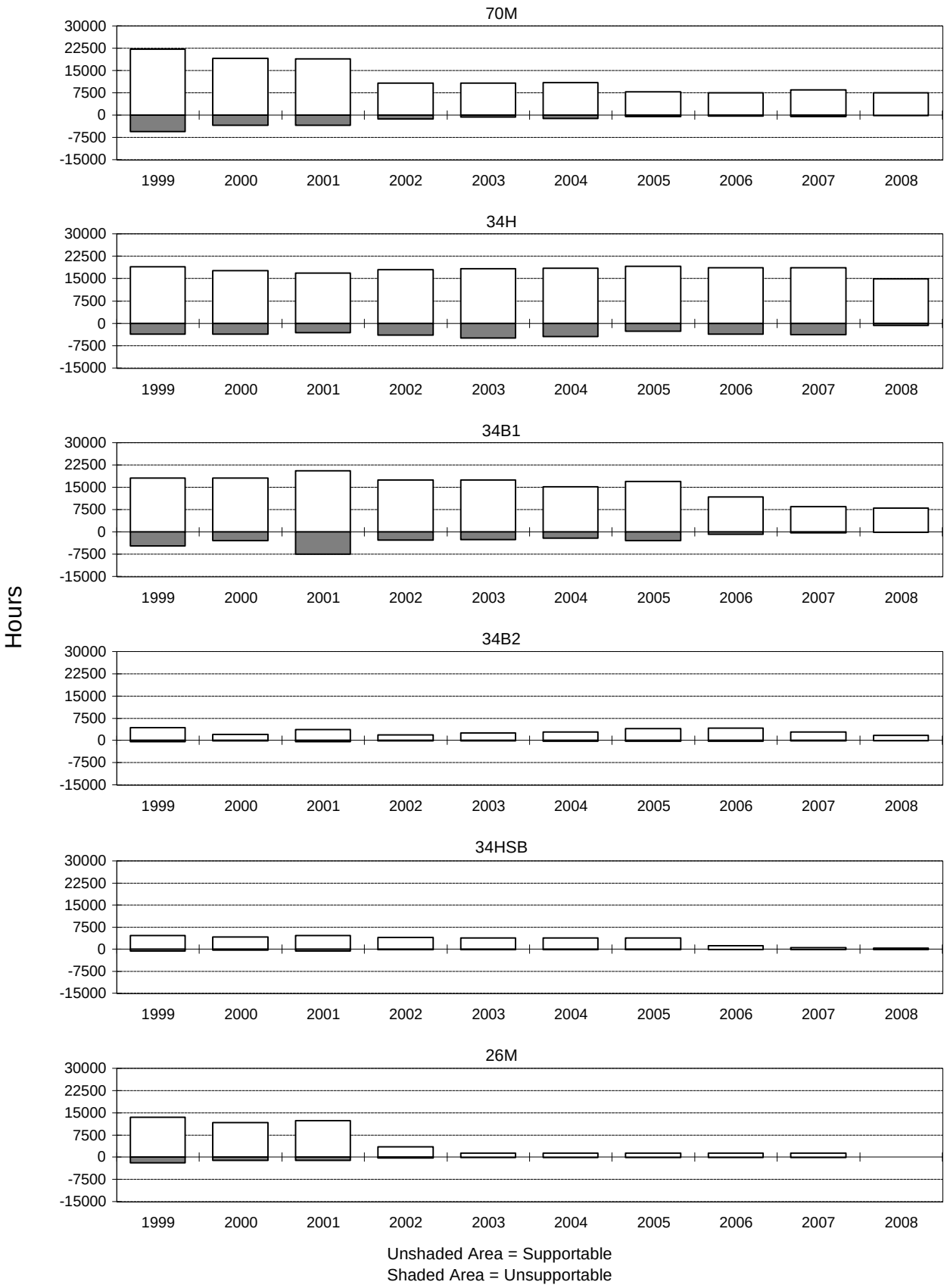
2000

The 26M projected unsupportable time is low for the entire year.

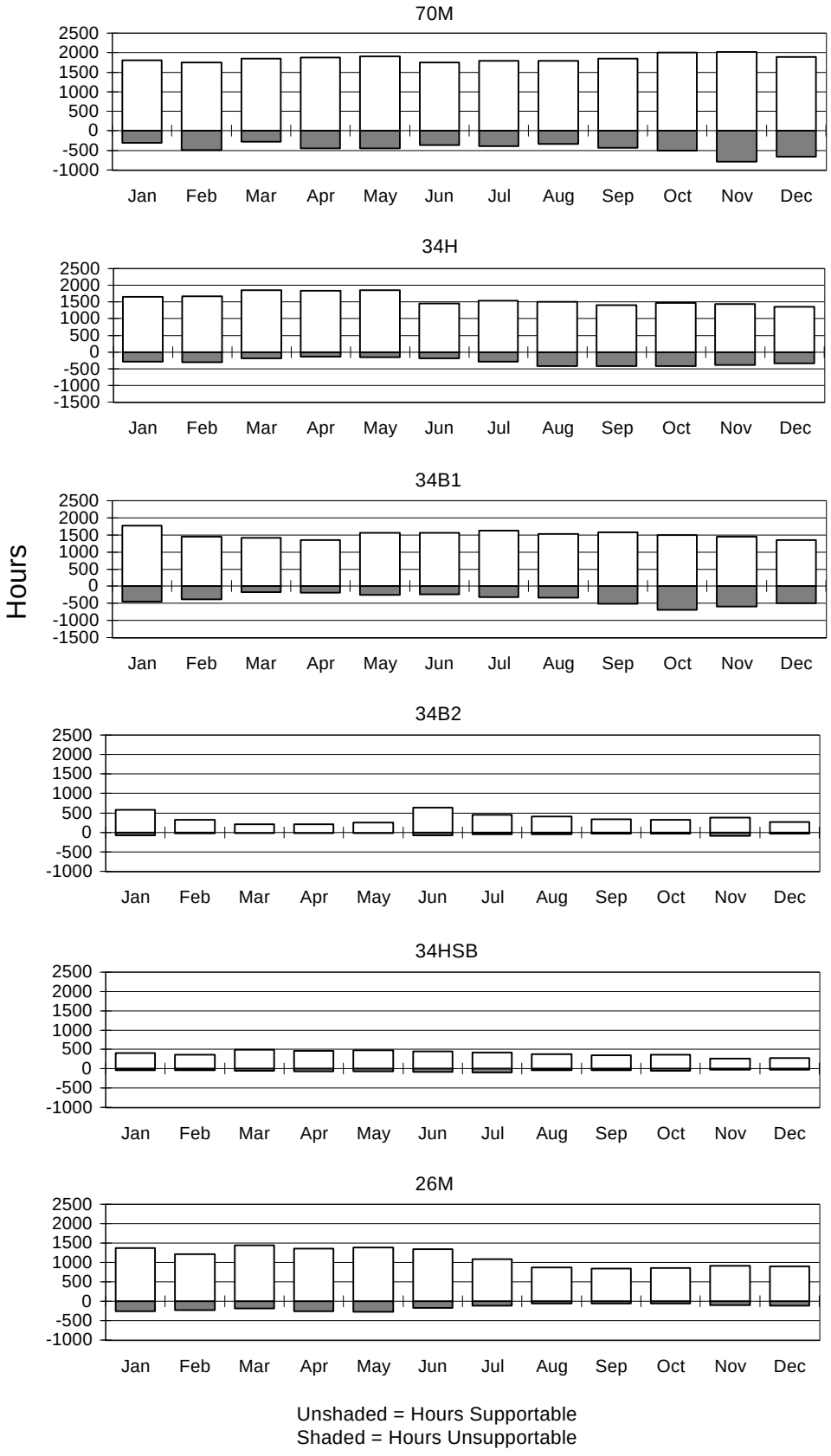
2001

The 26M projected unsupportable time is low for the entire year.

Projected Yearly Supportable Time Summary
1999 - 2008

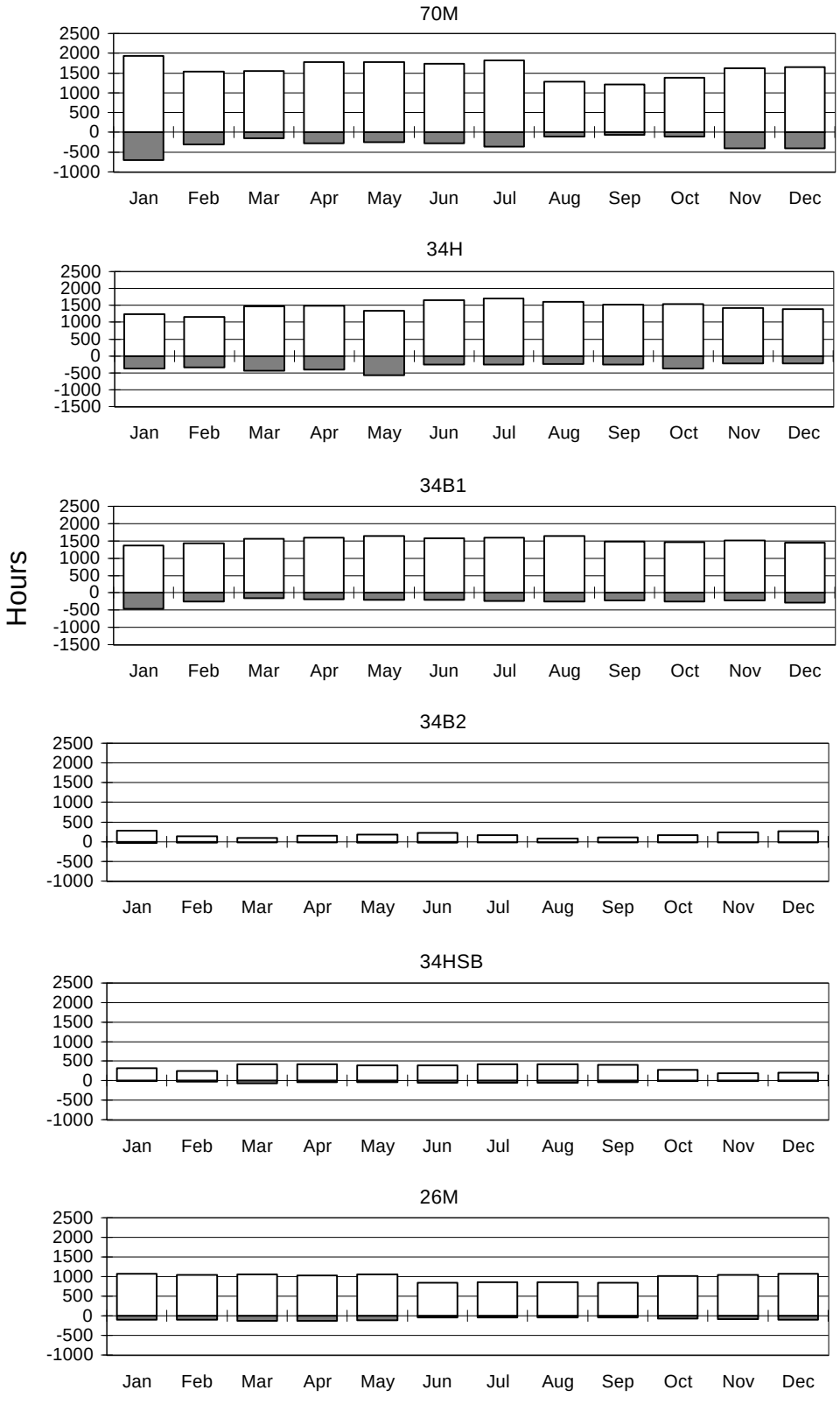


Monthly Projected Supportable Time by Subnet - 1999



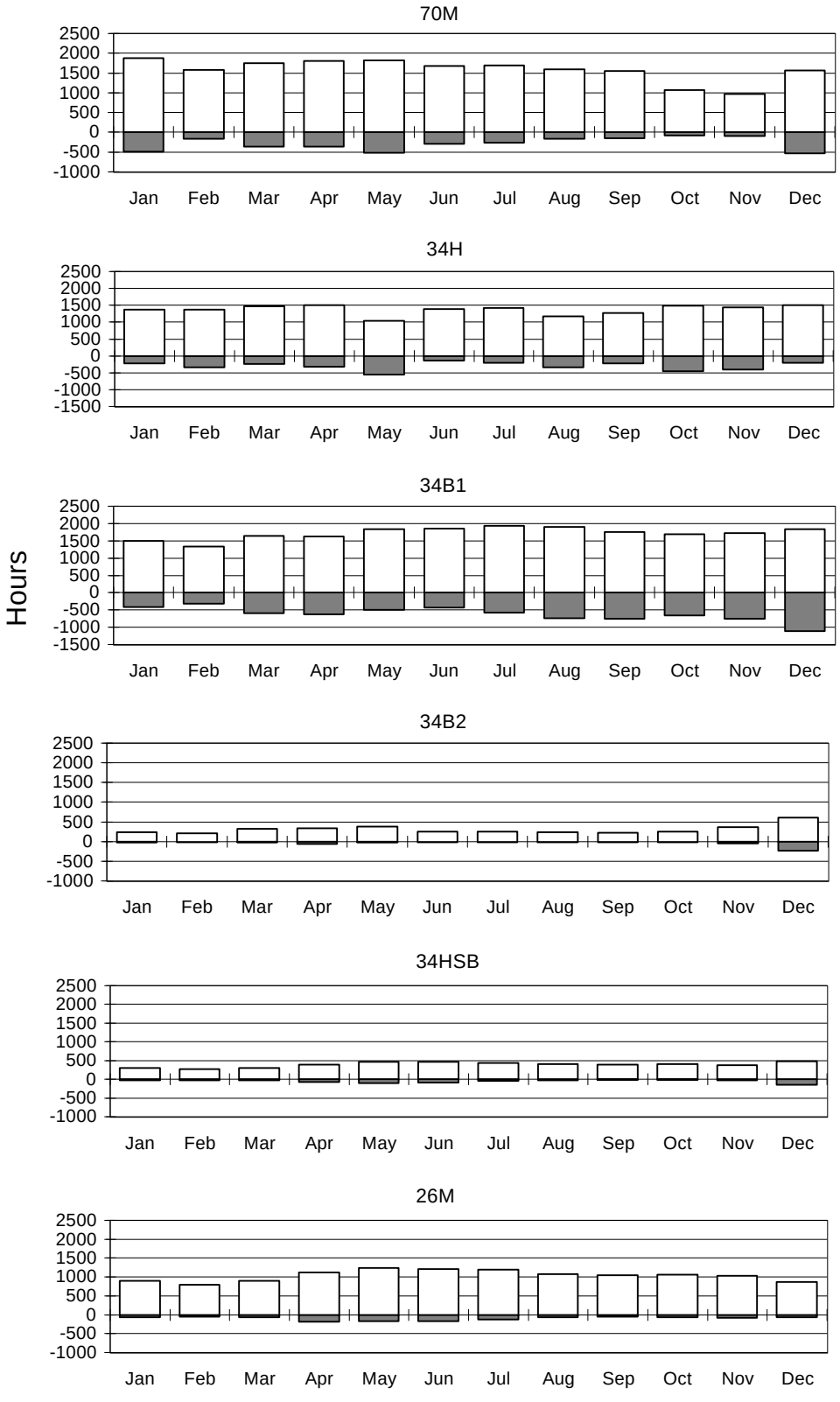
Unshaded = Hours Supportable
Shaded = Hours Unsupportable

Monthly Projected Supportable Time by Subnet - 2000



Unshaded = Hours Supportable
Shaded = Hours Unsupportable

Monthly Projected Supportable Time by Subnet - 2001



Unshaded = Hours Supportable
Shaded = Hours Unsupportable